

(19) World Intellectual Property  
Organization  
International Bureau



(43) International Publication Date  
15 September 2005 (15.09.2005)

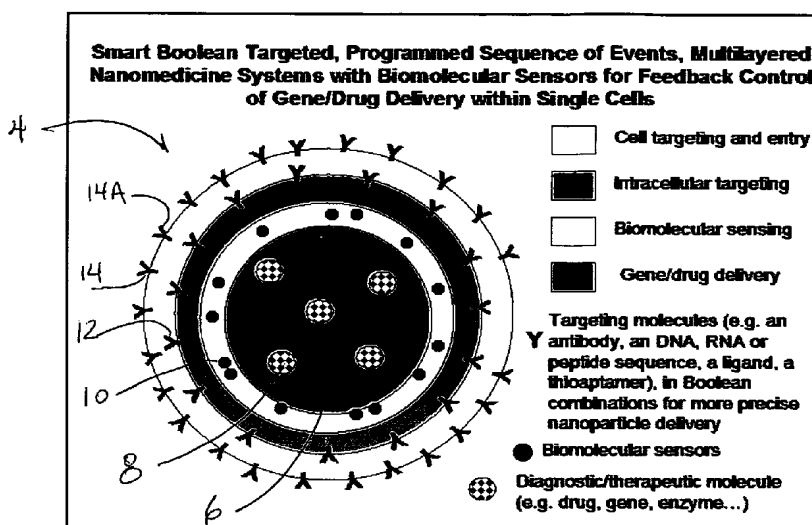
PCT

(10) International Publication Number  
**WO 2005/084326 A2**

- (51) International Patent Classification: **Not classified**
- (21) International Application Number:  
PCT/US2005/006692
- (22) International Filing Date: 4 March 2005 (04.03.2005)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:  
60/550,816 5 March 2004 (05.03.2004) US
- (71) Applicant (for all designated States except US): **BOARD OF REGENTS, THE UNIVERSITY OF TEXAS SYSTEM** [US/US]; 201 West 7th Street, Austin, TX 78701 (US).
- (72) Inventors; and
- (75) Inventors/Applicants (for US only): **LEARY, James, F.** [US/US]; 4 Legas Drive, Galveston, TX 77551 (US). **PROW, Tarl, W.** [US/US]; 9404 Swiven Plaza, Apt. 3D, Baltimore, MD 21237 (US).
- (74) Agent: **NELSON, D., Brit;** Locke Liddell & Sapp LLP, 600 Travis, Suite 3400, Houston, TX 77002-3095 (US).
- (81) Designated States (unless otherwise indicated, for every kind of national protection available): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NA, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SM, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.
- (84) Designated States (unless otherwise indicated, for every kind of regional protection available): ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, MC, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- Published:  
— without international search report and to be republished upon receipt of that report

[Continued on next page]

(54) Title: MULTILAYERED NANOMEDICINE DELIVERY SYSTEM AND METHOD



(57) Abstract: The disclosure provides a nanodelivery system and related process having complex, multilayered nanoparticles for sophisticated drug/gene delivery systems to intracellular portions of a cell. Outermost layers can include cell targeting and cell-entry facilitating molecules. The next layer can include intracellular targeting molecules for precise delivery of the nanoparticle complex inside the cell off interest. Molecular biosensors can be used to confirm the presence of expected molecules as a surrogate molecule for signs of infection, for activation in radiation damage, or other criteria, prior to delivery of counter-measure molecules such as drugs or gene therapy. The biosensors can also be used as a feedback control mechanism to control the proper amount of drug/gene delivery for each cell. Further, the nanodelivery system can be used to restrict any cells from encountering the drug unless that cell is specifically targeted. Successful targeting can be verified by 3D multispectral confocal microscopy.



---

*For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*